



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,444	01/14/2005	Steven T. Fink	264226US6YAPCT	8784

22850 7590 03/14/2007
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

CHANDRA, SATISH

ART UNIT	PAPER NUMBER
----------	--------------

1763

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/14/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/14/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/521,444	FINK, STEVEN T.	
	Examiner	Art Unit	
	Satish Chandra	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 22 are rejected under 35 U.S.C. 102(a or e) as being anticipated by Dandl et al (US 2001/0016166).

Dandl et al discloses a process chamber (Fig 1) comprising a lower wall and a side wall (not labeled) wherein the side-wall has a height of about 10.2 cms (about four inches, Para 0124).

Claims 10 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyagi (US 5,611,863).

Miyagi discloses:

A process chamber (Fig 2) having a plurality of pumping ports and a plurality of pumping cells (36, 37) are each connected to the respective pumping ports.

Claims 10, 21, 31 and 43 are rejected under 35 U.S.C. 102(e) as being anticipated by Komino (US 6,634,845).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Komino discloses:

A processing chamber (Fig 3) 80 having a plurality of pumping ports (Fig 16) and a plurality of turbo molecular pumps 88 are connected to respective pumping ports (Column 14, lines 50, 51) wherein the process chamber 80 (Fig 17) has an upper electrode 93a (Fig 17) to facilitate the formation of plasma.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 34 and 37 - 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komino (US 6,634,845) in view of Dandl et al (US 2001/0016166), Fink (US 7,163,603) and Carducci et al (US 2003/0038111).

Komino discloses a processing chamber (Fig 1) comprising:

Regarding claims 1 – 20, 22 – 28, 30 – 34 and 37 - 42, a processing vessel (chamber) PC having a lower wall (not labeled) and a side wall (not labeled) having a plurality of pumping ports (not labeled) disposed along the periphery of the floor separated from each other, symmetrically spaced about a chuck assembly 84, and each pumping port connected to a pump cell 88 (Fig 16, Column 14, lines 42 - 64).

Regarding claims 21, 29 and 43, an upper electrode 93a (Fig 17) to facilitate the formation of plasma.

Komino does not disclose:

Regarding claims 1, 11, 22, and 32 the side wall has a height of at most about four inches.

Regarding claims 2, 3, 12, 13, 23, 24, 33 and 34 process chamber is made of a plate stock of aluminum having a thickness of about four inches.

Regarding claims 8, 9, 19, 20, 30 and 42, process chamber is configured to have a chamber liner configured to reduce the open volume within the process chamber.

Dandl et al discloses:

Regarding claims 1, 11, 22 and 32, the vertical height of the space between a substrate and a partition wall 4 is of the order of 10.2 cm (about 4 inches, Para 0124, Fig 1).

Fink discloses:

Regarding claims 2, 3, 12, 13, 23, 24, 33 and 34, the plates of the housing 150 (Fig 2) of an inductively coupled plasma (ICP) source assembly 110 are made from

Art Unit: 1763

aluminum plate stock and can be formed of various thickness depending upon the source size and process requirements.

Carducci et al discloses:

Regarding claims 8, 9, 19, 20, 30 and 42, chamber liner 104 is disposed as a first liner 134, a second liner 118 and the lid liner 104 (Para 0056) adjacent to walls 106, 108 and the lid 102.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the vertical height of the side wall about four inches; make the process chamber from a plate stock of aluminum having a thickness of about four inches and install a liner in the apparatus of Komino as taught by Dandl et al, Fink and Carducci et al respectively.

The motivation to provide a side wall with a height of about four inches is to optimize the size of the process chamber in order to minimize fabrication and other costs.

The motivation for making the process chamber from a single stock of aluminum plate is again to minimize fabrication costs.

The motivation to provide a liner in the process chamber is to prevent the plasma gases from attacking the process chamber walls.

Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komino (US 6,634,845) in view of Dandl et al (US 2001/0016166), Fink (US 7,163,603) and Carducci et al (US 2003/0038111) as applied to claims 1 – 34 and 37 - 43 above, and further in view of Ishii (US 5,685,942).

Komino, Dandl et al, Fink, and Carducci et al do not disclose:

Regarding claim 35, the step of making the process chamber comprises a molding process.

Regarding claim 36, the lower wall is a plate and the side-wall is a rolled cylinder which is welded into the plate.

Ishii discloses:

Regarding claim 35, a plasma etching equipment 1 (Fig1) includes a processing housing 2 molded into a circular cylinder or a rectangular cylinder out of conducting material such as aluminum (Column 3, lines 30 – 35).

Regarding claim 36, it is well known in the art that two pieces can be joined together by welding.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a molding process for fabricating a process chamber in the apparatus of Komino, Dandl et al, Fink, and Carducci et al as taught by Ishii.

The motivation for using a molding process for fabricating a process chamber is to provide an alternate and equivalent means of fabricating process chambers.

Conclusion

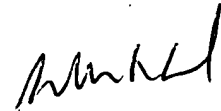
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satish Chandra whose telephone number is 571-272-3769. The examiner can normally be reached on 8 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, Primary Examiner, Jeffrie R. Lund can be reached on 571-272-1437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Satish Chandra



Jeffrie R. Lund
Primary Examiner

SC
2/9/2007